

3875081 G E SOLID STATE

01E 17796 D F-25-13

Triacs

File Number 1042

T2320, T2322, T2323, T2327 Series

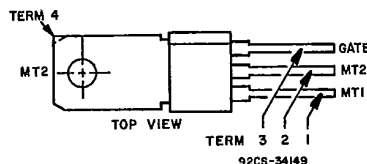
2.5-A Sensitive-Gate Silicon Triacs

For AC Power Switching

Features:

- 800V, 125 Deg. C T_J Operating
- High dv/dt and di/dt Capability
- Low Switching Losses
- High Pulse Current Capability
- Low Forward and Reverse Leakage
- Sipos Oxide Glass Multilayer Passivation System
- Advanced Unisurface Construction
- Precise Ion Implanted Diffusion Source

TERMINAL DESIGNATIONS



JEDEC TO-202AB

The RCA-T2320, T2322, T2323 and T2327, series triacs are gate-controlled full-wave silicon ac switches that are designed to switch from an off-state to an on-state for either polarity of applied voltage with positive or negative gate triggering voltages. The gate sensitivity of these triacs permits the use of economical transistorized or integrated cir-

cuit control circuits and enhances their use in low-power phase-control and load-switching applications.

All types in each series utilize the JEDEC-TO-202AB (VER-SATAB) plastic package.

MAXIMUM RATINGS, Absolute-Maximum Values:

	3mA Gate	T2320A	T2320B	T2320D	T2320E	T2320M	T2320N
10 mA Gate		T2322A	T2322B	T2322D	T2322E	T2322M	T2322N
25 mA Gate		T2323A	T2323B	T2323D	T2323E	T2323M	T2323N
5 mA Gate		T2327A	T2327B	T2327D	T2327E	T2327M	T2327N
V_{DROM} (Gate Open, $T_J = -40$ to 125°C)		100	200	400	500	600	800
$I_{T(RMS)}$ ($T_C = 95^\circ\text{C}$)					2.5		A
$I_{T(RMS)}$ ($T_A = 25^\circ\text{C}$)					1		A
I_{TSM} (for 1 full cycle)					25		A
di/dt					100		A/ μs
I^2t [At T_C shown for $I_{T(RMS)}$] (Half-sine wave):							
$t = 20$ ms					3.4		A ² s
$= 2.5$ ms					1.7		A ² s
$= 0.5$ ms					1		A ² s
For other time values					See Fig. 5		
I_{GTM} (For 1 μs max.)					1		A
P_{GM} (for 1 μs max.)					10		W
$P_{G(AV)}$ (Averaging time 10ms max.)					0.1		W
T Storage					-40 to 150		$^\circ\text{C}$
T_J					-40 to 125		$^\circ\text{C}$
T_r :							
During soldering for 10 s maximum at distance							
$\geq 1/16$ in. (1.58 mm) from seating plane					225		$^\circ\text{C}$

▲For either polarity of main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.

●For either polarity of gate voltage (V_G) with reference to main terminal 1.

■For temperature measurement reference point, see *Dimensional Outlines*.

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ELECTRICAL CHARACTERISTICS

ELECTRICAL CHARACTERISTICS
At Maximum Ratings Unless Otherwise Specified, and at Indicated Case Temperature (T_c)

CHARACTERISTIC	LIMITS For All Types Except as Specified			UNITS
	Min.	Typ.	Max.	
$I_{DROM} \blacktriangle$: Gate open, $T_J = 125^\circ\text{C}$, $V_{DROM} = \text{Max. rated value}$	—	0.2	0.75	mA
$V_{TM} \blacktriangle$: $i_T = 10\text{ A (peak)}$, $T_C = 25^\circ\text{C}$ T2322, T2322, T2327 series $i_T = 10\text{ A (peak)}$, $T_C = 25^\circ\text{C}$ T2323 series	— —	1.7 1.7	2.2 2.6	V
$I_{HO} \blacktriangle$: Gate open, Initial principal current = 150 mA (dc), $v_D = 12\text{ V}$, $T_C = 25^\circ\text{C}$	—	15	30	mA
dv/dt (Commutating) \blacktriangle : $v_D = V_{DROM}$, $I_{T(RMS)} = 2.5\text{ A}$, commutating $di/dt = 1.33\text{ A/ms}$, gate unenergized, $T_C = 95^\circ\text{C}$	1	4	—	$V/\mu s$
dv/dt (Off-state) \blacktriangle : $v_D = V_{DROM}$, exponential voltage rise, gate open, $T_C = 125^\circ\text{C}$	10	100	—	
$I_{GT} \blacktriangle \bullet$: $v_D = 12\text{ V dc}$, $R_L = 30\ \Omega$, $T_C = 25^\circ\text{C}$ (See Fig. 7)				mA
Mode I+ V_{MT2} positive V_G positive				
T2320 series	—	—	3	
T2322 series	—	—	10	
T2323 series	—	—	25	
T2327 series	—	—	5	
III- negative negative				
T2320 series	—	—	3	
T2322 series	—	—	10	
T2323 series	—	—	25	
T2327 series	—	—	5	
I- positive negative				
T2320 series	—	—	3	
T2322 series	—	—	10	
T2323 series	—	—	40	
T2327 series	—	—	5	
III+ negative positive				
T2320 series	—	—	3	
T2322 series	—	—	10	
T2323 series	—	—	40	
T2327 series	—	—	5	
$V_{GT} \blacktriangle \bullet$: $v_D = 12\text{ V dc}$, $R_L = 30\ \Omega$, $T_C = 25^\circ\text{C}$ $v_D = V_{DROM}$, $R_L = 125\ \Omega$, $T_C = 125^\circ\text{C}$ (See Fig. 8)	— 0.15	1 —	2.2 —	V
t_{gi} : $v_D = V_{DROM}$, $I_G = 60\text{ mA}$, $t_r = 0.1\ \mu s$, $i_T = 10\text{ A (peak)}$, $T_C = 25^\circ\text{C}$	—	1.8	2.5	μs
R_{QJC}	—	—	8	$^{\circ}\text{C/W}$
R_{JA}	—	—	80	$^{\circ}\text{C/W}$

▲For either polarity of main terminal 2 voltage (V_{MT2}) with reference to main terminal 1.

- For either polarity of gate voltage (V_G) with reference to main terminal 1.

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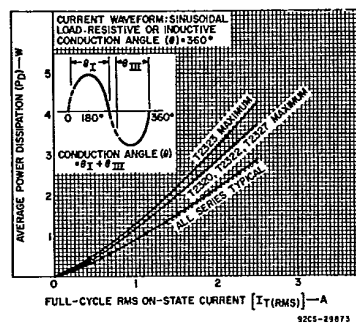


Fig. 1 — Power dissipation as a function of on-state current.

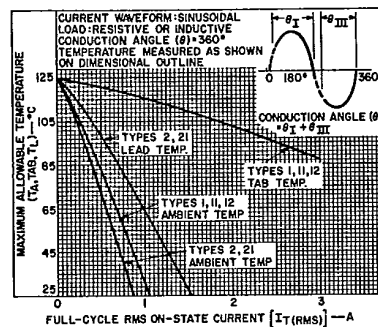


Fig. 2 — Maximum allowable temperature as a function of on-state current for T2320, T2322, and T2327.

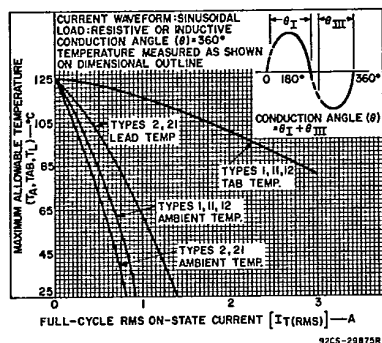


Fig. 3 — Maximum allowable temperature as a function of on-state current for T2323.

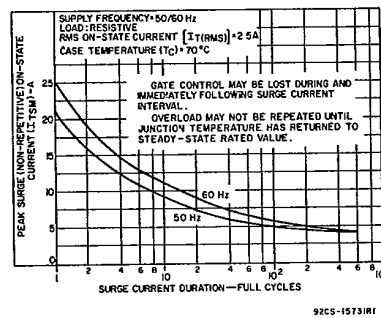


Fig. 4 — Peak surge on-state current as a function of surge-current duration.

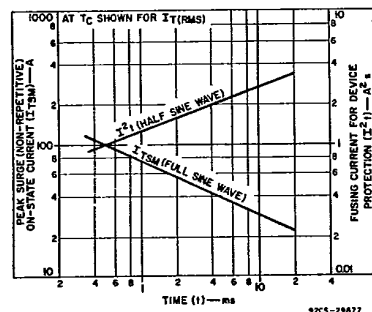


Fig. 5 — Peak surge on-state current and fusing current as a function of time.

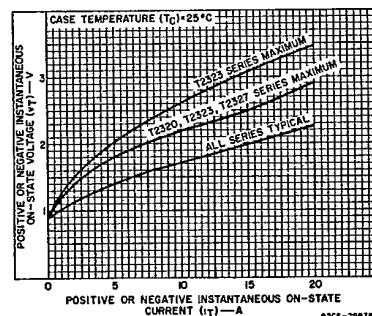


Fig. 6 — On-state current vs. on-state voltage.

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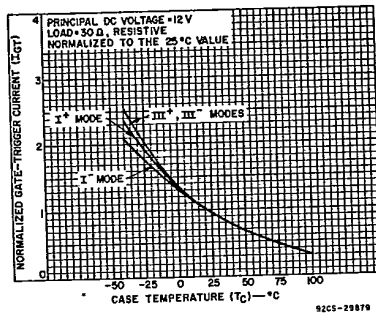


Fig. 7 — Gate-trigger current vs. case temperature.

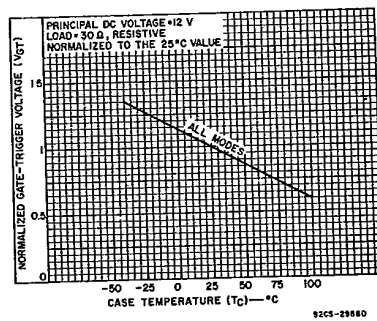
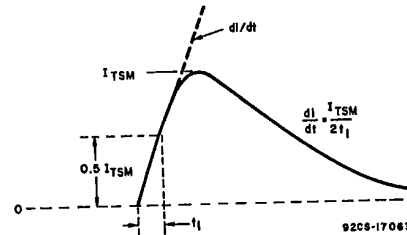
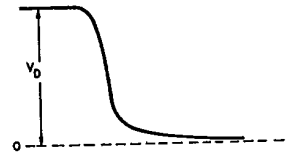
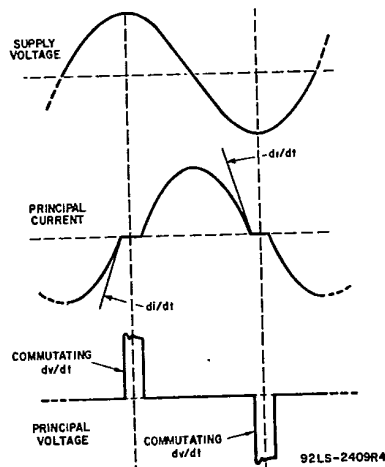
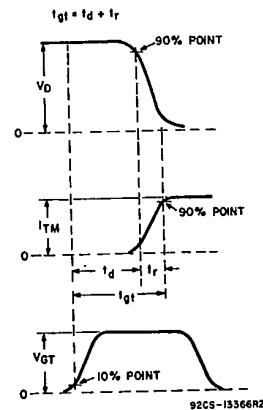


Fig. 8 — Gate-trigger voltage vs. case temperature.

Fig. 9 — Rate-of-change of on-state current with time (defining di/dt).Fig. 10 — Relationship between supply voltage and principal current (inductive load) showing reference points for definition of commutating voltage (dv/dt).Fig. 11 — Relationship between off-state voltage, on-state current, and gate-trigger voltage showing reference points for definition of turn-on time (t_{gt}).